

# Chapter 2 starts Here

Mixture ← Matter → Pure Substance

- Physical combination of 2 or more substances in which they retain their individual properties and can be physically separated

- Sample of matter that has the same properties and chemical makeup regardless of source or sample size. Cannot be broken w/o losing those properties.

3 types:

Suspension  
Colloid

Solution - smallest particles

↳ Solute - What gets dissolved.

Solvent - does the dissolving.

(aq) - Aqueous - dissolved in water.

Homogeneous - Even <sup>or uniform</sup> distribution

Heterogeneous - A not uniform or uneven distribution.

- Physical Properties - Properties observed without change

- Chemical Properties - Properties observed while changing the chemical makeup of a substance.

↳ A chemical reaction is taking place.

elements - sample of matter with only one type of atom.  
"Building blocks,  $N, C, O_2$

Compounds - Two or more different elements chemically combined.  
 $CO, CuSO_4$

Solid  
liquid  
gas

aqueous

→ 4 lines of evidence.

- color change

- gas released (bubbles)

- Energy released/  
(heat, light, sound) Absorbed

- precipitate forms -  
insoluble solid (doesn't dissolve)

heat released - exothermic  
heat absorbed - endothermic



# Elements

1. Metals
2. Non Metals
3. Metalloids

## Metals - (left of Staircase)

- (have luster) Shine
- Malleable (can be rolled out in sheets; shapeable)
- Can conduct heat/electricity
- Ductility - can be drawn into wire
- Tensile strength - resistance to being pulled apart

## Non Metals - (right of Staircase)

- Opposite of Metals
- dull
- Brittle
- Insulators

## Metalloids - (On the Staircase)

- Share properties of both metals and non metals
- Semi-conductors

# Periodic Table

## Group 1 - Alkali metals

↳ Soft, silvery, reactive

↳ React with water ( $\text{Na} + \text{H}_2\text{O} \rightarrow \text{H}_2 + \text{NaOH}$   
base)

Reactivity increases down the group.

↳ not found freely in nature

## Group 2 - Alkaline earth metals

↳ Harder, Denser, ~~less~~ less reactive than group one, reactive not found freely in nature.

3-12

## Group ~~2~~ - Transition Metals

↳ varying metallic properties

## Group 17 - Halogens

↳ Highly reactive non-metals.

↳ React with group one metals.

## Group 18 - Noble Gases

↳ unreactive, colorless, odorless